The Stressors and Demands of Peacekeeping in Kosovo: Predictors of Mental Health Response

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U.S. soldiers' appraisal and experience of the Kosovo peacekeeping mission is described. Using a prospective design, we evaluated the prevalence, severity, and predictors of several mental health outcomes at redeployment. We found that peacekeepers frequently were exposed to potentially traumatizing and other stressful events while in Kosovo, but on average, their appraisal of those events was moderate. Postdeployment psychopathology was also low—soldiers endorsed more severe mental health difficulties at predeployment, which suggests anticipatory negative affect. After controlling for the impact of predeployment stressors, we examined the contribution of potentially traumatizing events, general overseas military duty stressors, negative aspects of peacekeeping roles, and generic positive military experiences, including morale, to explain variance in four outcomes: post-traumatic stress disorder, depression, hostility and aggression problems, and problems with alcohol abuse. Findings indicate that hostility and drinking may be more chronic problems that emerge during stressful times, whereas depression and post-traumatic stress disorder symptoms may be more apt to fluctuate and are associated with potentially traumatizing experiences during peacekeeping. The implications and limitations of the study are discussed.

Introduction

Since June 1999, the United States has contributed soldiers (currently approximately 5,300) to the NATO-led international force responsible for establishing and maintaining security in Kosovo (the Kosovo Force, KFOR). The mission is a peace-enforcement operation, sanctioned and mandated by the United Nations. Before KFOR, Kosovo was in a state of civil war stemming from many years of subjugation, conflict, violence, and retribution for bloodshed between the Army of Yugoslavia and Albanian Muslims, which resulted in a grave humanitarian crisis. The objectives of KFOR are: to establish and maintain a secure environment in Kosovo, including public safety and order; to monitor, verify, and when necessary, enforce compliance with the agreements that ended the conflict; and to provide assistance to the United Nations mission in Kosovo, which is designed to assist in rebuilding civilian infrastructure.[1]

As part of a much larger contingent of forces from 30 different nations, U.S. military personnel in Kosovo secure a safe environment, especially for minorities who are often the victims of ethnic hatred, provide humanitarian assistance, and help to rebuild civil structures. Soldiers provide a constabulary presence to prevent conflict, and they interdict during riots, acts of violence, arson, and looting. Soldiers have also arrested hundreds of suspected criminals and confiscated weapons and ammunition. In addition, KFOR troops have contributed to a tremendous humanitarian success story—nearly a million refugees and displaced people have been able to return to their homeland.

It appears then that while peacekeeping duty in Kosovo is difficult, demanding, and stressful, it is also potentially personally and professionally rewarding. For example, soldiers may feel fulfilled by helping rebuild communities and by increasing feelings of safety among civilians. Generally, the majority of soldiers cope exceptionally well with the complex demands and challenges of peacekeeping.[2] Yet, research has also shown that unlike peacekeeping missions such as Sinai, where peace has already been well established, peace-enforcement operations such as Kosovo are associated with greater risk for psychopathology. This increased risk is a result of more frequent exposure to potentially traumatizing events (PTEs) and greater internal conflict, which arises when previous military training comes into conflict with humanitarian and constabulary duties.[2–4] However, it is difficult to anticipate how stressful and demanding (or rewarding) the KFOR mission may have been for U.S. military personnel. It is difficult to generalize from the literature on peace-enforcement operations primarily because the data stem from the U.S. operation in Somalia, which was unprecedented and uniquely dangerous.[5] In addition, most research on military peacekeepers has failed to account for pre-existing stress (e.g., preparing one's family for deployment) and psychopathology (i.e., diagnosable mental health conditions occurring before deployment). It is unclear whether the rates or degree of mental health problems at redeployment, more specifically symptoms that fall on the mental health continuum, reflect pre-existing exposure to trauma or predeployment stress and other mental health disturbances.[6,7]

In this study, we examined U.S. soldiers' experience of the KFOR mission and the degree of psychopathology implicated by various dimensions of peace-enforcement duty in Kosovo. Consistent with our previous work examining the mental health outcomes associated with peacekeeping and peace enforcement, we evaluated the relative contribution of PTEs (e.g., witnessing violence), general overseas military duty stressors (e.g., being away from family and support systems), negative aspects of peacekeeping roles (e.g., uncertainty about roles and rules of engagement), and generic positive military experiences (e.g., pride, friendship), including morale, as predictors of four outcomes: post-traumatic stress disorder (PTSD), depression, hostility and aggression problems, and problems with alcohol abuse.

In addition, we used a novel prospective design—soldiers were evaluated before they deployed to Kosovo, so a baseline could be established. This allowed us to control for levels of stress before

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deployment to determine the unique contribution of exposure to stressors during the deployment on later psychological adjustment. We controlled for history of traumatic events, general life stressors at predeployment (e.g., marital difficulties), as well as baseline levels of the principal outcome variables measured at redeployment.

Methods

Participants

Active duty military personnel stationed at a U.S. military base were asked to complete a survey approximately 2 to 3 weeks before their deployment to Kosovo. Both Army airbase and ground troop soldiers deployed for the peacekeeping mission in Kosovo were recruited to participate in this study. Soldiers were informed that participation was completely voluntary and 1,132 soldiers agreed to participate. This was a convenience sample in that all soldiers who were present for duty were asked to participate, but there is no information on the rate of refusal. Of those initially surveyed, 324 soldiers agreed to participate in a follow-up assessment and provided contact information, which allowed us to locate them once they returned from Kosovo. We were able to contact 203 of these soldiers by mail or phone for a postdeployment interview an average of 7 months after they returned from Kosovo. Soldiers in the follow-up group reported the following roles in Kosovo: 41% combat arms; 21% combat support; 21% service support; and 17% "other."

Procedure

Soldiers deployed for the peacekeeping mission in Kosovo were recruited to participate in this study while completing their deployment paperwork at a U.S. military base. An officer in charge of briefing the soldiers first told them about the study. The first page of the survey provided instructions, informed soldiers that their participation was voluntary, and ensured their confidentiality. The Veterans Affairs Boston Institutional Review Board approved all procedures and materials. Soldiers filled out the survey in a large auditorium under standardized conditions with a research coordinator present to provide instructions and answer questions. The questionnaire took approximately 45 minutes to complete, and soldiers were asked to indicate whether they would be willing to be contacted after deployment to complete a follow-up survey. Well-trained interviewers from a national survey research organization conducted follow-up surveys by phone, which took 30 to 45 minutes to complete. Individuals who could not be contacted by phone, but for whom current addresses were available, were sent the survey via the mail.

Predeployment Measures

The predeployment survey consisted of a demographics questionnaire, a measure of morale and cohesion, a measure of past and current stressors, and measures of current mental health, including instruments assessing symptoms of PTSD, depression, hostility, and drinking behaviors.

Current Stressors

Soldiers were asked to rate the level of trouble or concern caused in the last 6 months by 23 items on a 6-point Likert scale ranging from 0 "does not apply" to 5 "very high." Potential stressors included items such as financial problems, health difficulties, family problems, and employment difficulties. The α-reliability for this scale was 0.87.

The Life Events Checklist (LEC)

The LEC was developed concurrently with the Clinician-Administered PTSD Scale and was designed to be administered before administration of the Clinician-Administered PTSD Scale to screen for PTEs that respondents may have experienced. It consists of 16 items inquiring about the experience of PTEs known to result in PTSD or other post-traumatic symptoms. For each LEC item, a score of 1 was assigned only if the respondent reported directly experiencing an event, and a 0 was assigned if any other response option was endorsed. A recent study found that the LEC exhibits excellent test-retest reliability and good convergence with existing measures of trauma history (M. Gray, B.T. Litz, J.L. Wang, M.J. Lombardo, unpublished data). In a clinical sample of combat veterans, the LEC was significantly correlated with measures of psychological distress and was more strongly predictive of PTSD symptoms than was a measure of combat exposure (M. Gray, B.T. Litz, J.L.Wang, M.J. Lombardo, unpublished data).

PTSD Checklist

PTSD symptoms were assessed using a modified version of the PTSD Checklist (PCL).[8] This instrument uses a 5-point Likert scale ranging from 1 "not at all" to 5 "extremely," to evaluate the severity of each of the 17 PTSD symptoms in the *Diagnostic and Statistical Manual of Mental Disorders* (DSM-IV)[9] (e.g., "repeated, disturbing dreams of the stressful experience"). This scale has demonstrated excellent internal consistency ($\alpha = 0.97$) as well as good sensitivity and specificity (0.82 and 0.83, respectively).[8,10,11] The Cronbach α for the current sample was 0.97 at predeployment.

Depression

A six-item measure of depression taken from the Brief Symptom Inventory[12,13] was used for the purpose of this study. Participants were asked to rate items (e.g., "feeling blue") on a 5-point Likert scale ranging from 0 "not at all" to 4 "extremely," and higher scores indicated greater depression. The Cronbach α reliability for depression was 0.90 at predeployment.

Hostility

A five-item measure of hostility was taken from the Brief Symptom Inventory,[12,13] and participants were asked to respond to each item (e.g., "temper outburst that you could not control") on a 5-point Likert scale ranging from 0 "not at all" to 4 "extremely," with higher scores indicating greater hostility. The Cronbach α reliability for hostility was 0.89 at predeployment.

Military Unit Cohesion and Morale

Although cohesion and morale are multidimensional constructs, for sake of brevity, we used a five-item scale of military unit cohesion and morale. Participants were asked to respond to items on a 5-point Likert scale ranging from 0 "very low" to 4 "very high." Participants were asked to rate the strength of their experiences of: general moral, morale in their unit, cohesion in

their unit, pride in their unit, and pride in the U.S. Army. These items were culled from the Combat Readiness Morale Questionnaire, widely used in the Israeli Army and also adapted for use with U.S. troops.[14] The Cronbach α for the current sample was 0.86 at predeployment. Generally, high scores indicate unity, solidarity, perceived support, and satisfaction within the unit and the military generally.

Alcohol Use

Soldiers were asked to report the average number of alcoholic beverages consumed in a typical week with one drink being a glass of wine, a bottle of beer, or a shot of liquor.

Postdeployment Measures

The postdeployment survey consisted of self-report measures to assess a number of psychological outcome variables, military cohesion and unit morale, and appraisals of a variety of potentially stressful and potentially rewarding aspects of the peacekeeping mission.

PTSD

The PCL was repeated during the postdeployment survey with some items referring specifically to the Kosovo experience. The α reliability for this measure at postdeployment was 0.92.

Depression

The Brief Symptom Inventory depression items were repeated at postdeployment, and the α reliability for postdeployment was 0.89.

Hostility

Nine items were used to measure hostility at postdeployment. Participants were asked to rate on a dichotomous scale whether they participated in a number of anger and hostile-related behaviors postdeployment (e.g., destroying property, threatening someone with violence, being verbally abusive). The α reliability for this measure was 0.70.

Military Unit Cohesion and Morale

This scale was repeated at postdeployment. The α reliability at postdeployment was 0.83.

Alcohol Use

Participants were asked five dichotomously rated questions relating to their alcohol use in the past month. Questions asked about indicators of problem drinking, such as feelings of guilt in reaction to drinking and thinking that one has a current problem with alcohol abuse. The α reliability of this measure was 0.77.

Indices of Exposure and Appraisal

Appraisals of the potentially negative and positive aspects of participation in the mission were assessed using a number of scales that were rationally derived based upon our previous work evaluating peacekeeping-related stress.[2] Items were constructed to fit into the following four appraisal and exposure categories:

1. General Overseas Military Stressors (GOMS). This eight-item measure was used to evaluate generic, low-magnitude stressors that soldiers are exposed to in any overseas military deployment. The internal consistency of this scale was 0.78. For each of the items, participants were asked to rate the degree to which the experience had a negative impact on them personally. Response options ranged from 1 "no negative impact" to 4 "extremely negative impact."
2. Negative Aspects of Peacekeeping Scale (NAPS). This scale was composed of 17 items, which measured the extent to which participants found peacekeeping duties and issues related to the mission in Kosovo difficult or frustrating on a 4-point Likert scale ranging from 1 "no negative impact" to 4 "extremely negative impact." The internal consistency of this scale was 0.88.
3. Positive Military Experiences Scale (PMES). This 11-item scale, used in our previous study of peacekeeping in Somalia,[2] assessed the general positive aspects of military service (e.g., pride in serving your country). For each of the items, participants were asked to rate the degree to which the experience had a positive impact on them personally. Response options ranged from 1 "no positive impact" to 4 "extremely positive impact." Internal consistency was 0.87 for this measure.
4. PTE Scale. This 21-item scale is derived, in part, from the Combat Exposure Scale,[15] which is a measure of the frequency of exposure to war-zone-related stressors. Our research team derived additional items that roughly fit the characterization of a criterion A event for PTSD as described in DSM-IV.[9] The scale required participants to rate how negative their emotional reactions were concerning various experiences, which were likely to produce fear, helplessness, or horror while they were in Kosovo, on a 5-point Likert scale ranging from 0 "does not apply to me" to 4 "extremely negative impact." The internal consistency of this scale was 0.92.

Results

All of the analyses in this study were done using the statistical software package SPSS version 11.0 for Windows.

Predeployment Data

Follow-Up Group Comparison

As seen in Table I, we compared those soldiers who completed the postdeployment survey (n = 203) to those who were not followed up (n = 929) on various demographic and military characteristics. Soldiers who completed the postdeployment survey differed significantly on a number of background variables compared with those who were not followed up. Those soldiers who completed the postdeployment survey tended to be slightly older, married, slightly more educated, and somewhat higher in rank. However, as Table I indicates, there were no statistically significant group differences in regards to sex and the number of previous deployments.

Predeployment PTSD

Using a decision rule used in previous epidemiological studies of PTSD in peacekeepers,[2] we determined the prevalence of

TABLE I

COMPARISONS OF THOSE SOLDIERS WHO WERE FOLLOWED UP VS. SOLDIERS WHO WERE NOT FOLLOWED UP ON DEMOGRAPHIC AND MILITARY CHARACTERISTICS

Demographic and Military Characteristics	Soldiers Who Completed the Follow-Up Survey (n = 203)	Soldiers Who Did Not Complete Follow-Up Survey (n = 929)	Statistic Comparing the Two Groups
Age, years (mean ± SD)	28.30 ± 6.56	26.31 ± 6.27	$T = 4.04^a$
Sex			
Male	93%	90%	$\chi^2 = 1.66$
Female	7%	10%	
Marital status			
Married	62%	48%	$\chi^2 = 12.00^a$
Not married	38%	52%	
Highest level of education			
High school diploma or less	50%	62%	$T = 2.28^b$
Some college/technical school	29%	26%	
College degree or higher	21%	12%	
Rank			
Junior enlisted (E-1 to E-4)	43%	60%	$T = 4.01^a$
Noncommissioned officers (E-5 to E-9)	45%	32%	
Officers (O-1 and higher; warrant officers)	12%	8%	
No. of previous deployments (mean ± SD)	0.32 ± 0.67	0.38 ± 0.66	$T = 1.06$

[a] $p < 0.01$.
[b] $p < 0.05$.

PTSD cases reported during the predeployment phase. Based on the DSM-IV,[9] a participant was considered to be a PTSD case if they endorsed at least one re-experiencing symptom, three avoidance or numbing symptoms, and at least two hyperarousal symptoms rated as occurring "quite a bit" or "extremely." Accordingly, the prevalence of PTSD cases at predeployment was 13%. This rate is higher than the predeployment rate in a previous study of Bosnia peacekeepers[6](8%). This is likely to be due to sampling differences and measurement error. The high rate may also be due to greater anticipatory anxiety experienced before the Kosovo mission.

Postdeployment Data

Positive Military Experiences

Table II includes appraisals of various positive military experiences while in Kosovo. We considered an experience to have been generally positive if the soldier rated it as moderately to extremely positive. Peacekeepers indicated that their most positive experience was representing the United States to people in another country (92%), which was closely followed by feeling supported by fellow soldiers (90%) and feeling that your mission was successful (88%). Participants rated feeling emotionally attached to civilians as the least positive experience while deployed to Kosovo (47%). The mean score for the full scale was 3.17 ± 0.58.

TABLE II

PMES

Item	Percentage of Soldiers Who Endorsed Item as Moderately or Extremely Positive
Representing the United States to people in another country	92
Feeling supported by fellow soldiers	90
Feeling that your mission was successful	88
Learning about a new culture	87
Developing a better appreciation of the United States	87
Having the opportunity to visit a new country	84
Being in the Balkans for a good cause	83
Feeling the mission was important to your development as a soldier	75
Feeling that the mission was important to your growth as a person	75
Feeling that the American people were proud of you	71
Feeling emotionally attached to the civilians	47

For each item, the response options were: 1, no positive impact; 2, little positive impact; 3, moderately positive impact; or 4, extremely positive impact. Mean ± SD score for full scale was 3.17 ± 0.58. N = 203 but may slightly vary from item to item due to missing data.

General Overseas Mission Stressors

Table III indicates appraisals of generic hassles and stressors associated with overseas military missions. Based upon the percentage of peacekeepers who endorsed experiences as moderately to extremely negative on the GOMS, the most frustrating and stressful general stressors were being overseas during special events such as birthdays and holidays (74%) and being separated from family and friends (71%). The peacekeepers were also particularly distressed due to feelings of boredom (54%). The mean score for the full scale was 2.29 ± 0.72.

Negative Peacekeeping Experiences

Table IV indicates appraisals of negative peacekeeping experiences in Kosovo. Based upon the percentage of peacekeepers

TABLE III

GOMS

Item	Percentage of Soldiers Who Endorsed Item as Moderately or Extremely Negative
Having been separated from your family on special days such as birthdays, anniversaries, and holidays	74
Being separated from family and friends	71
Feeling bored	54
Feeling like duties were repetitive	42
Having little privacy and personal space	46
Having difficulty getting mail and phone calls through	31
Feeling unsure of how long you would be deployed	26
Having bad weather conditions	20

For each item, the response options were: 0, not applicable; 1, no impact; 2, little negative impact; 3, moderate negative impact; or 4, extremely negative impact. Mean ± SD score for full scale was 2.29 ± 0.72). N = 203 but may slightly vary from item to item due to missing data.

who endorsed experiences as moderately to extremely negative on the NAPS, the most frustrating and stressful general stressors were knowing that many of the war criminals were not arrested (73%), seeing children who were victims of war (67%), and seeing civilians in despair (58%). Additionally, a majority of the Kosovo peacekeepers reported moderate or extreme frustration concerning seeing the physical devastation (52%) and knowing that there was a lack of supplies for civilians (52%). The mean score for the full scale was 1.99 ± 0.67.

Potentially Traumatizing Experiences in Kosovo

Table V indicates ratings of potentially traumatizing experiences in Kosovo, which were calculated using the percentage of soldiers who endorsed experiences as moderately to extremely negative. In addition, we were interested in exploring the overall percentage of soldiers who were exposed to these PTEs. Patrolling (or riding) in areas where there were mines was most frequently reported as moderately or extremely stressful (33%), followed by fear of having your unit fired on (28%), locating unexploded land mines (23%), and seeing human remains (23%). The mean score for the full scale was 0.61 ± 1.23.

Postdeployment PTSD

Using the DSM-IV[9] criteria to determine PTSD caseness (see Predeployment PTSD for criteria), there were fewer PTSD cases after the deployment to Kosovo (4%) than during the predeployment interval (13%). In fact, the drop in PTSD cases was statistically significant (χ^2 = 12.23; $p < 0.01$). These results suggest that PTSD related to the Kosovo peacekeeping mission was minimal. The 4% PTSD prevalence level found in this study is considerably greater than the 1.3% rate found in Bosnia (Han, Litz, Wang, Britt, Adler, Bartone, Roemer, unpublished data) and less than the 8% rate found after the Somalia mission.[2]

We also examined postdeployment PTSD as a continuous severity score (as indexed by the PCL). The mean predeployment PTSD score was 25.76 ± 13.46, and the mean postdeployment PTSD score was 22.10 ± 8.97. These PTSD scores were signifi-

TABLE IV

NAPS

Item	Percentage of Soldiers Who Endorsed Item as Moderately or Extremely Negative
Knowing that many of the war criminals were not arrested	73
Seeing children who were victims of war	67
Seeing civilians in despair	58
Seeing the physical devastation	52
Knowing that there was a lack of supplies for civilians	52
Being unable to identify a clear enemy	47
Witnessing the cycle of hatred among the Croats, Albanians/Muslims, and Serbs	47
Civilians having hostile or rejecting reactions to you while you were trying to help	42
Feeling like the civilians did not appreciate you	33
Frustration with terrorist activity	31
Feeling that you did not make a lasting impact	30
Having to remain neutral in the face of conflicts between civilians	29
Having to exercise restraint while patrolling dangerous areas	26
Witnessing hostility between former warring factions	25
Dealing with rules of engagement	24
Noticing strong cultural differences between you and the Croats, Albanians/Muslims, and Serbs	22
Witnessing hostility over property or boundaries disputes	20
Feeling unclear about what to do in threatening situations	19
Frustration about not knowing what to do with captured insurgents	16
Understanding your unit's mission	15

For each item, the response options were: 0, not applicable; 1, no impact; 2, little negative impact; 3, moderate negative impact; or 4, extremely negative impact. Mean ± SD score for full scale was 1.99 ± 0.67). N = 203 but may slightly vary from item to item due to missing data.

TABLE V

PTE SCALE: BY HIGHEST PERCENTAGE OF NEGATIVELY ENDORSED ITEMS

Item	Percentage of Soldiers Who Endorsed Item as Moderately to Extremely Negative	Percentage of Soldiers Who Had at Least One Experience
Patrolling (or riding) in areas where there were mines	33	83
Fear of having your unit fired on	28	88
Locating unexploded land mines	23	59
Seeing human remains	23	53
Going on patrols or performing other dangerous duties	22	85
Fear of being ambushed or attacked	21	76
Needing to manage civilians in chaotic conditions	20	62
Seeing dead or injured civilians	20	55
Seeing dead or injured U.S. soldiers	17	33
Having to aid in the removal of human remains	16	35
Witnessing violence	15	61
Fear that you might be taken hostage	15	67
Seeing dead or injured NATO (non-U.S.) soldiers	13	30
Being shot at	13	35
Patrolling through the zone of separation	11	61
Witnessing an explosion	11	49
Having to aid in the removal of unexploded ordnance	11	41
Being injured because of an accident	10	30
Disarming civilians	8	43
Being injured because of an assault/attack	8	27
Experienced sexual harassment during the deployment	4	24

For each item, the response options were: 0, not applicable; 1, no impact; 2, little negative impact; 3, moderate negative impact; or 4, extremely negative impact. Mean ± SD score for full scale was 0.61 ± 1.23). N = 203 but may slightly vary from item to item due to missing data.

cantly different ($t(1,333) = 4.91$; $p < 0.05$). To examine the relative severity of PTSD symptoms reported by soldiers in our study, we compared the PTSD symptom severity scores of soldiers deployed to Bosnia (Han, Litz, Wang, Britt, Adler, Bartone, Roemer, unpublished data) and Somalia[2] to our sample. Kosovo veterans reported significantly fewer PTSD symptoms as compared with both the Bosnia peacekeepers (mean, 23.95 ± 9.58; $t(400) = 2.09$; $p < 0.05$) and the Somalia peacekeepers (mean, 27.67 ± 12.47; $t(3,662) = 6.27$; $p < 0.01$).

Pre- vs. Postmental Health

Soldiers' mental health was compared pre- and postdeployment on the four outcome measures used in the regression analyses. Only soldiers who were followed up were included in the analysis to yield the most accurate results. Paired samples t test demonstrated that soldier at predeployment were higher on PCL severity ($t(198) = 6.73$; $p < 0.01$), depression ($t(199) = 4.13$; $p < 0.01$), and hostility ($t(199) = 4.33$; $p < 0.01$) than soldiers at postdeployment. There were no differences on alcohol use measures.

Statistical Predictors of Mental-Health Symptomatology

In the next set of analyses, we wanted to examine the kinds of stressors and experiences predictive of a number of mental health symptoms at postdeployment while controlling for mental health symptoms at predeployment, previous potentially traumatic experiences, and overall baseline distress. The mental health outcome variables that we chose to examine were hostility, problem drinking, depression, and PTSD-related stress, all of which have been postulated to increase following exposure to military stressors.[16] A number of variables measuring soldiers' appraisals of peacekeeping experiences were used as predictors in these analyses. Morale was also included in

TABLE VI

HIERARCHICAL REGRESSION OF APPRAISALS OF PEACEKEEPING EXPERIENCES PREDICTING HOSTILITY

Variable	β	T	Adjusted R^2
Step 1			0.07
Age (years)	−0.10	−1.08	
Education	0.07	0.76	
Rank	−0.27[a]	−2.70	
Step 2			0.31[a]
Life events checklist	0.04	0.55	
General life stressors	0.13	1.73	
Predeployment hostility	0.44[a]	5.76	
Step 3			0.46[a]
Positive military experiences	−0.06	−0.93	
GOMS	−0.14	−1.89	
NAPS	0.12	1.39	
PTE	0.07	0.94	
Total stress symptoms	0.36[a]	5.42	
Morale	−0.14[b]	−2.02	

Note: Model statistics for the hostility index equation is: $F_{12, 164} = 12.63$; $p < 0.01$. Rank was measured as follows: 1, Junior enlisted (E-1–E-4); 2, Noncommissioned Officers (E-5–E-9); 3, Officers (O-1 and higher, and Warrant Officers).

[a] $p < 0.01$.

[b] $p < 0.05$.

TABLE VII

CORRELATIONS AMONG VARIABLES IN REGRESSION MODELS

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. LEC	—														
2. Stressors	0.17[a]	—													
3. PCL (pre)	0.15[a]	0.47[b]	—												
4. PCL (post)	0.12	0.25[b]	0.44[b]	—											
5. Depression (pre)	0.19[b]	0.44[b]	0.80[b]	0.37[b]	—										
6. Depression (post)	0.07	0.35[b]	0.47[b]	0.78[b]	0.49[b]	—									
7. Hostility (pre)	0.14	0.45[b]	0.73[b]	0.27[b]	0.76[b]	0.31[b]	—								
8. Hostility (post)	0.13	0.30[b]	0.44[b]	0.50[b]	0.39[b]	0.47[b]	0.50[b]	—							
9. Alcohol (pre)	0.13	0.12	0.23[b]	0.09	0.23[b]	0.07	0.34[b]	0.34[b]	—						
10. Alcohol (post)	−0.05	0.05	0.29[b]	0.47[b]	0.25[a]	0.45[b]	0.14	0.26[b]	0.22[a]	—					
11. Morale (post)	0.05	−0.21	−0.14[a]	−0.02	−0.15[a]	−0.14[a]	−0.10	−0.20[b]	0.04	0.07	—				
12. PMES (post)	0.05	−0.05	0.08	0.08	0.04	0.08	−0.09	−0.11	−0.13	0.08	0.37[b]	—			
13. NAPS (post)	0.01	0.17[a]	0.15[a]	0.28[b]	0.10	0.23[b]	0.04	0.16[a]	−0.07	0.09	−0.03	0.15[a]	—		
14. GOMS (post)	0.01	0.23[b]	0.13	0.10	0.11	0.19[b]	0.08	0.04	−0.04	0.03	−0.29[b]	−0.10	0.49[b]	—	
15. PTES (post)	0.04	0.12	0.17[a]	0.34[b]	0.07	0.29[b]	0.01	0.19[b]	−0.01	0.16	0.03	0.18[a]	0.56[b]	0.14[a]	—

Abbreviations: pre, predeployment; post, postdeployment.

[a] $p < 0.05$, two-tailed.

[b] $p < 0.01$, two-tailed.

these regressions, given the fact that previous literature has suggested a relationship between this variable and overall mental health.[17]

Before running hierarchical regressions to test predictors of these mental health outcomes, a number of potentially related demographic and military variables were correlated with the mental health outcome variables. These variables included age, sex, marital status, education, rank, and number of previous deployments. If a correlation was significant, then the appropriate demographic or military variable was included in the regression equation.

Predictors of Postdeployment Hostility

In the hierarchical regression model predicting hostility at postdeployment (Table VI), demographic and military characteristics were first entered in block 1 to partial out the variance attributable to these background variables. As this was a prospective study, we were able to control for previous potentially traumatic events, baseline stress, and baseline levels hostility, and each of these variables were entered in block 2. Finally, in block 3, morale and the five appraisal and exposure variables (i.e., PMES, GOMS, NAPS, PTEs, and PCL severity) were entered to determine whether they significantly predicted hostility at postdeployment. The correlation matrix of variables used in this and the following regression analyses is depicted in Table VII.

The model specified accounted for 46% of the variance in postdeployment hostility. After controlling for various demographic and military variables, as well as previous potentially traumatic events, baseline stress, and baseline levels of hostility, both total stress symptoms and morale emerged as significant predictors of postdeployment hostility.

Predictors of Postdeployment Problem Drinking

In the hierarchical regression model predicting problem drinking at postdeployment (Table VIII), none of the demographic and military characteristics were correlated with the outcome variable, and as a result, these variables were not included in the analysis. Once again, we controlled for previous

TABLE VIII

HIERARCHICAL REGRESSION OF APPRAISALS OF PEACEKEEPING EXPERIENCES PREDICTING DRINKING

Variable	β	T	Adjusted R^2
Step 1			0.03
Life events checklist	−0.03	−0.26	
General life stressors	0.01	0.02	
Predeployment alcohol	0.25[a]	2.51	
Step 2			0.17[b]
Positive military experiences	0.17	1.68	
GOMS	0.11	0.96	
NAPS	−0.13	−0.94	
PTE	0.15	1.33	
Total stress symptoms	0.37[b]	3.73	
Morale	0.06	62	

Note: Model statistics for the drinking index equation is: $F_{9,\ 104} = 3.31$; $p < 0.01$.

[a] $p < 0.05$.

[b] $p < 0.01$.

TABLE IX

HIERARCHICAL REGRESSION OF APPRAISAL OF PEACEKEEPING EXPERIENCES PREDICTING DEPRESSION

Variable	β	T	Adjusted R^2
Step 1			0.21[a]
Life events checklist	0.01	0.16	
General life stressors	0.24[a]	3.13	
Predeployment depression	0.31[a]	4.01	
Step 2			0.28[a]
Positive military experiences	0.07	1.04	
GOMS	0.12	1.51	
NAPS	−0.07	−0.72	
PTE	0.30[a]	3.66	
Morale	−0.04	−0.49	

Note: Model statistics for the depression index equation is: $F_{8,\ 178} = 9.67$; $p < 0.01$.

[a] $p < 0.01$.

potentially traumatic events, baseline stress, and baseline levels of drinking, and each of these variables was entered in block 1. In block 2, morale and the five appraisal and exposure variables were entered to determine whether they significantly predicted problem drinking at postdeployment.

The model specified accounted for 17% of the variance in postdeployment problem drinking. After controlling for previous potentially traumatic events, baseline stress, and baseline levels of drinking, total stress symptoms emerged as a significant predictor of postdeployment problem drinking.

Predictors of Postdeployment Depressive Symptoms

In the hierarchical regression model predicting depressive symptoms at postdeployment (Table IX), none of the demographic and military characteristics were correlated with the outcome variable, and as a result, these variables were not included in the analysis. We controlled for previous potentially traumatic events, baseline stress, and baseline levels of depression, and each of these variables was entered in block 1. In block 2, morale and four appraisal and exposure variables (i.e., PMES, GOMS, NAPS, and PTEs) were entered to determine whether they significantly predicted depression at postdeployment. The variable of total stress symptoms was not included in this analysis given its high correlation with the outcome variable of depressive symptoms.

The model specified accounted for 28% of the variance in postdeployment depressive symptoms. After controlling for previous potentially traumatic events, baseline stress, and baseline levels of depression, the PTEs that soldiers were exposed to emerged as a significant predictor of postdeployment depressive symptoms.

Predictors of Postdeployment PTSD Symptomatology

In the hierarchical regression model predicting PTSD symptoms at postdeployment (Table X), none of the demographic and military characteristics were correlated with the outcome variable, and as a result, these variables were not included in the analysis. We controlled for previous potentially traumatic events, baseline stress, and baseline levels of PTSD symptoms, and each of these variables was entered in block 1. In block 2, morale and four appraisal and exposure variables were entered to determine whether they significantly predicted PTSD symptoms at postdeployment.

The model specified accounted for 25% of the variance in postdeployment PTSD symptoms. After controlling for previous potentially traumatic events, baseline stress, and baseline levels of PTSD symptoms, the PTEs that soldiers were exposed to emerged as a significant predictor of postdeployment PTSD symptomatology.

TABLE X

HIERARCHICAL REGRESSION OF APPRAISALS OF PEACEKEEPING EXPERIENCES PREDICTING STRESS

Variable	β	T	Adjusted R^2
Step 1			0.18[a]
Life events checklist	0.07	1.03	
General life stressors	0.09	1.13	
Predeployment PCL	0.38[a]	4.81	
Step 2			0.25[a]
Positive military experiences	−0.02	−0.25	
GOMS	−0.01	−0.17	
NAPS	0.08	0.86	
PTE	0.25[a]	2.90	
Morale	0.06	0.76	

Note: Model statistics for the stress index equation is: $F_{8,\ 177} = 8.39$; $p < 0.01$.

[a] $p < 0.01$.

Discussion

We examined the stressors and psychological outcomes associated with the Kosovo peacekeeping mission using a prospective design. The majority of peacekeepers we evaluated were exposed to a number of PTEs (e.g., seeing human remains) and anxiety related to the possibility of violence (e.g., fear of being ambushed or attacked) while serving in Kosovo. However, the majority of soldiers reported experiencing these putatively threatening events as less than moderately aversive. Consequently, Kosovo peacekeepers did not evidence significant psychopathology as a result of their duties in Kosovo. After controlling for predeployment state, we found lower rates of PTSD, less PTSD symptom severity, less severe depression, and less hostility at redeployment. Indeed, soldiers were more distressed at predeployment than at redeployment, which was consistent with previous studies.[6] It is possible that soldiers experienced intense anticipatory anxiety while in the staging phase of their deployment and considerable relief that their worst fears were unrealized at redeployment. Given this finding, it would be helpful for future studies to survey soldiers before they receive orders for deployment, as well as pre- and postdeployment. Surveying soldiers before they receive orders would allow for a more "true" baseline as well as for comparison of these three very different time points.

Results indicated that none of the Kosovo appraisal and experience variables were associated with postdeployment hostility, suggesting that anger and aggressive behavior may be a product of predisposing characteristics and pre-existing behavior patterns. Hostility at postdeployment was most associated with predeployment hostility and secondarily to rank, morale, and stress symptoms. Given the latter association, it may be important to assess soldiers' overall distress upon returning from any overseas deployment, because stress symptoms may exacerbate a pre-existing problem with anger and hostility. Alternatively, our measure of hostility may be evaluating overlapping personality constructs, for example, negative affectivity or neuroticism. In terms of the unique association of hostility and morale, it is possible that soldiers who feel greater support and a greater sense of cohesion may feel less inclined to exhibit hostile or aggressive behavior postdeployment. In addition, the possibility that morale may act as a mediator, serving to minimize negative mental health outcomes, should be explored in future studies. Another possibility is that a third variable, such as social connectedness or relatedness, could account for the association between hostility and morale. The measure we used to examine morale does not allow for a more detailed analysis of the connection between hostility and morale. Future research should examine the separate and combined influences of cohesion, morale, and esprit de corps.

In a similar vein, we found problem-drinking behaviors at postdeployment to be best predicted by predeployment alcohol use and total stress symptom severity. Variance in problem drinking was unrelated to the Kosovo appraisal and experience variables. This further indicates that pervasive traits may combine with overall stress to contribute to postdeployment problem behaviors. Future research should use well-established measures of various aspects of enduring personality to examine the relationship between predisposition, general life demands, and deployment stress.

In contrast to the above, depression and PTSD symptoms were associated with soldiers' appraisals of their peacekeeping experiences. Predeployment general life stressors (e.g., family stressors, financial difficulties, etc.), predeployment depression severity, and PTEs reported during the mission, were significant predictors of the severity of postdeployment depression. It appears that reports of symptoms of depression at redeployment are related to pre-existing strains, pre-existing depressed mood, and aversive peacekeeping experiences. Similarly, significant predictors of PTSD symptom severity at redeployment were predeployment PTSD symptoms and the impact of PTEs in Kosovo. PTEs in a peace-enforcement mission are uniquely implicated in depressed mood and PTSD symptoms, even after factoring in predeployment symptoms.

There are several limitations to this study that should be noted. First, given that this is a sample of convenience, soldiers who were surveyed may not be a representative sample of all soldiers deployed to Kosovo, and as a result, the external validity of this study may be limited. Related, the soldiers who completed the postdeployment survey differed on several of the demographic variables when compared with the sample predeployment. Only a small percentage of soldiers who were surveyed at predeployment agreed to be contacted postdeployment thus possibly accounting for some of these differences. The reasons for this should be explored in future studies. It may be that soldiers who are invested in their privacy may feel greater stigma about mental health. As a result, the reader should interpret these findings with a degree of caution.

Overall, the picture that emerges is that peacekeeping experiences did not contribute to significant psychopathology in soldiers deployed to Kosovo. Kosovo might represent a unique type of peace-enforcement operation for U.S. troops, who may deploy at later stages, when there may be greater security, more well-established routines and rules of engagement, and no ongoing war, but rather, skirmish, riots, and the emotional and physical residue of prolonged bloodshed and complex civil war. It could also be that the U.S. military has become very well prepared to conduct peacekeeping and peace-enforcement operations, including preparing, educating, and supporting soldiers with respect to these very unique demands and roles.

Nevertheless, because the soldiers we evaluated were, on average, more anxious while preparing to go overseas to the peace-enforcement mission than when they returned, it may be fruitful to examine and act to reduce stress levels and anticipatory concerns before deployment. Furthermore, in soldiers deployed for peacekeeping missions, hostility and drinking behaviors may be more chronic problems that emerge during stressful times. However, depression and PTSD symptoms may be more apt to fluctuate and can be accounted for by appraisal and experience dimensions of the peacekeeping mission. As a result, postdeployment early intervention may reduce the stress and strain of memories of difficult deployment experiences that pose a significant risk for postdeployment depression and PTSD.

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